ATTACHMENT D
SCOPE OF WORK

Scope of Work

(Revised to Address DEP Specific Comments)

IRON POWDER *IN-SITU* TREATMENT OF CONTAMINATED RIVER SEDIMENT

submitted by:
Center for Environmental Engineering
Stevens Institute of Technology
Hoboken, NJ 07030

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Project Objective

The objective of this investigation is to demonstrate in the laboratory the feasibility of using zero valent iron powder to reduce the in situ halogenated organics and leachable heavy metals more noble than iron, located in the upper depths of sediment in the Passaic River. We envision that this treatment will result in the creation of a clean cap within the Passaic River sediment to four feet below the scour line. This cap will result in the prevention of migration of sediment contaminants downstream due to scouring and minimize the problems and cost associated with the disposal of contaminated sediment from harbor dredging. Clean- up target levels for such contaminants as PCBs, chlorinated pesticides and herbicides, chlorinated semi-volatiles, dioxins, furans, and leachable metals more noble than iron will be identified by the project team in collaboration with NJDEP project advisors on the basis of the results from this study and subsequent field demonstration of the proposed clean cap concept.

The creation of the clean cap will be achieved by introducing specific quantities of iron powder into the contaminated sediment to dehalogenate the chlorinated organics and reduce leachable metals such as lead, copper, and chromium to their zero valent state or less soluble state respectively. The quantities of zero valent iron employed in the treatment to achieve desired rates of reduction will be determined in this project.

In addition, a commercial zero valent iron powder injection system that has been developed and used by ARS for application at contaminated sites containing halogenated organics in soils with physical characteristics similar to sediment will be evaluated in the laboratory for its feasibility as a sediment injection system. The system will be modified as necessary to avoid resuspension and transport downstream of contaminated sediment during delivery of the iron powder into the river.

PHASE 1

Task I-1: Site Selection and Sample Collection

This task entails the selection of a location in the Passaic River, (such as adjacent to the Diamond Shamrock facility/ Newark where the highest priority for remediation exists) where samples will be collected for studies in the laboratory and to provide background data for a future in situ field demonstration. The sampling location will be made on the basis of certain criteria, which includes the following:

- Knowledge of contamination history at location and level of targeted contamination such as dioxins, furans, PCBs, semi volatile halogenated organics, chlorinated pesticides and herbicides, and leachable heavy metals more noble than iron whose levels demonstrate the highest priority for remediation

- Ease of access to location where a contained test facility can be set up so that isolated sediment and river water can be utilized for a future field demonstration of the technology

The location of the selected site where samples will be collected will be determined by GPS on board the Stevens Research Vessel R/V Phoenix. Samples will be collected by performing coring at the selected site, transported in the laboratory and preserved in accordance with sediment sampling and preservation procedures described in 'The Management and Regulation of Dredging Activities and Dredged Material in New Jersey's Tidal Waters' NJDEP (October 1997) Appendix A. Sediment samples taken over 1-foot intervals will be homogenized in accordance with NJDEP requirements and characterized in the laboratory at Stevens Institute of Technology. Replicate samples will be forwarded to an outside laboratory certified to analyze for dioxin and furan analysis. This information will serve to provide baseline data and ensure that the contaminant levels exceed the minimum detectable levels by at least a factor of 10. This level of contaminant will ensure significant initial concentration reductions that can be measured over sixty days. Analysis of duplicate samples at Stevens will include natural organic matter, (determined as total organic content) grain size, targeted PCBs, selected semi volatile halogenated organics, chlorinated pesticides and herbicides, total and leachable heavy metals more noble than iron. A percentage of replicate samples will be sent to an outside certified lab in order to measure dioxins, furans, and all other analyses performed at Stevens to ensure data quality.

The analysis of the numerous samples collected at different depths and kinetic tests consisting of samples mixed with different quantities of iron powder (see task I-2) will be used to evaluate the rate of reduction of the representative contaminants. The kinetic tests and required analysis will be performed at Stevens. In order to minimize the project analytical costs only selected samples will be analyzed by an outside certified laboratory to measure the rate of reduction of furans and dioxins in the presence of iron powder.

Sample analysis will be performed in accordance to 'The Management and Regulation of Dredging Activities and Dredged Material in New Jersey's Tidal Waters' NJDEP (October 1997) Appendix B. Stevens will employ EPA method 3550 or 3540 to extract semi volatile and non-volatile organic compounds from the sediment samples. Method 3550 is a simple sonication extraction with methylene chloride: acetone (1: 1, v: v). However, the solvent may not be separated well with the aqueous phase in the sediment. In case that Method 3550 can not be used for the extraction, a solvent extraction with hot solvent (methylene chloride or methanol/toluene) for 16-24 hours will be performed. The organic compounds in the solvent will be concentrated by distillation for analysis. High content of sulfur in the extraction solvent may interfere with the analysis of the target organic compounds. Pretreatment may be necessary to remove sulfur prior to the organic analysis. PCBs and chlorinated pesticides (dieldrin (1,2,3,4-diepoxybutane)) will be analyzed using GC/MS according to EPA Methods 680 and 8270, respectively. Halogenated organic compounds (TCE (trichloroethene)) will be measured using EPA Method 502.2.

Total contents of heavy metal in the sediment will be determined using microwave assisted acid digestion (Method 3051) and atomic absorption spectrometer. Since the Fe treatment will not change the total content of heavy metals in the sediment, the effectiveness of the treatment will be evaluated with the toxicity characteristics leaching procedure (TCLP) (Method 1311).

A summary of the analytical methods to me used is provided below:

Type of Analyte	Analysis Method	Performed at:	Split Sample Analysis
PCBs	EPA 680	Stevens	5% analyzed in a certified lab
Halogenated Organics	EPA 502.2	Stevens	5% analyzed in a certified lab
Dioxins/Furans	EPA 1613 revision B	Certified Lab	none
Total Metals	EPA 3051 EPA 1311	Stevens	5% analyzed in a certified lab
Chlorinated Pesticides	EPA 8270	Stevens	5% analyzed in a certified lab

The following general analytical QA/QC procedures will be followed:

Field Blanks and Trip Blanks	One every batch less than 20 samples
Method blanks	One every batch less than 20 samples or every 12 hours
Matrix spike and duplicate	One set for every batch less than 20 samples
Surrogate spike recovery (organics only)	One for each sample
Duplicate	As per method requirement

A general QAPP plan will be developed for the project. This plan will describe in detail quality assurance protocols for:

1. Sample collection, transport and preservation
2. Sample analysis
3. Experimental procedures for treatability study
4. Data analysis

In addition, a Health and Safety plan will be developed in conjunction with sampling activities in the Passaic river.

Task I-2: Direct Contact Treatment of Sediment:

This task entails the execution of batch studies employing the sediment samples collected from the sampling site to determine the effectiveness of the E-200 iron powder in treating the various toxic contaminants present in the sediment under well mixed conditions. In these experiments, the organic pollutants and heavy metals in the sediment samples will be treated by mixing the Fe powder with homogenized sediment in closed glass reactors employing an end to end mixer operating at a maximum mixing rate to achieve optimum slurry homogeneity thus enhancing contaminant reduction rates. The reactors will be operated with minimal head space but sufficient to accommodate slurry mixing.

The kinetic studies will be carried out at laboratory temperatures and under anaerobic conditions since residual oxygen present in a sample can readily react with the iron powder to form Fe_2O_3. The iron-sediment-water slurries will be prepared using homogenized sediment. The slurry will be characterized to determine the initial concentrations of all the contaminants of interest. A parametric study will be performed to evaluate pertinent system and kinetic parameters as follows:

- Mixing characteristics and mixing time determination: Different quantities of saturated sediment will be added to sealed reactors to determine the maximum quantity of sediment that can be effectively mixed in the presence of a specific quantity of iron and the time required to reach homogeneous slurry conditions. Monitoring of the magnetic characteristics of the iron powder can be employed to measure the distribution of the iron powder within the sediment in a closed reactor.

- Determination of iron dosages: Different dosages of Fe powder will be mixed in the sediment samples according to the levels indicated in Table 1. The effectiveness of different dosages of Fe powder upon the contamination concentration reduction will be measured. A control sample without the addition of Fe powder will be prepared and tested along with the treated samples. All experiments will be performed in duplicate to ensure quality assurance.

- Effects of reaction time on contaminant reduction: The Fe powder in the sediment samples will be mixed for different time periods as indicated in Table 1. Samples will be allowed to react for 2, 5, 10, 30, and 60 days. Appropriate controls will also be prepared for each specified reaction time.

- Determination of contaminant reduction: Samples will be withdrawn from each batch reactor, including the control reactors, at the specified time intervals and analyzed to determine the concentration of the contaminants and the reaction products associated with the oxidation of iron. A replicate sample of sediment in the 60-day reaction vessel will be sent for analysis to an outside certified laboratory and analyzed for furans, dioxins, and PCBs. This analysis will identify the rate of furan and dioxin reduction and verify Stevens' analytical results obtained with the PCBs analysis. The total contents of the organic pollutants, such as PCBs and other halogenated organic compounds in the samples will be determined using solvent extraction procedures according to EPA standard methods. The leachability of the heavy metals in the samples will be evaluated using TCLP test.

- Kinetic modeling: The concentration profiles obtained for individual contaminants in the batch reactors will be utilized to derive the rate law of reduction of these contaminants. The rate law constants will be estimated by fitting linear or non-linear kinetic models to the data by least squares regression.

Table 1. Schedule for Batch Tests

	Analysis Time (day)				
Fe Content (g/100 g dry sediment)	2	5	10	30	60
0 (control samples)	X	X	X	X	X
0.01	X	X	X	X	X
0.1	X	X	X	X	X
1	X	X	X	X	X
5	X	X	X	X	X

The effectiveness of dechlorination of PCBs and other halogenated organics and metals by the Fe powder is affected by the numbers of chlorine atoms. Organics with high chlorine contents take longer to treat with Fe powder. Therefore, the contents of a series of PCB compounds in the control and treated samples will be determined. The PCBs to be tested include 2-chlorobiphenyl, 2,3-dichlorobiphenyl, 2,4,5-trichlorobiphenyl, 2,2',3,4,5'-pentachlorobiphenyl, 2,2',4,6-tetrachlorobiphenyl, 2,2',3,3'4,4',5,5'6,6'-decechlorobiphenyl, 2,2',3,3'4,5',6,6'-octachlorobiphenyl, 2,2',3,4',5,6,6'-heptachlorobiphenyl, 2,2',4,4',5,6'-hexachlorobiphenyl.

The experimental results obtained will be used to determine the optimal Fe dosage required for the treatment of the contaminated sediments. The data obtained will also be used to design the in situ sediment treatment process that will be used to demonstrate that chlorinated organic contents and heavy metal leachability can be reduced to targeted levels in the sediment within a constructed isolated area in the Passaic River where the highest priority for remediation exists.

Phase II Design of In Situ Iron Powder Delivering System for Passaic River Sediment

Task II-1: Design and Assembly of Laboratory Flume

Delivery of iron powder into sediment to create a clean cap to four feet below the scour line must address the concern about possible resuspension of sediment during injection of the iron powder into the sediment. In addition, the injection system will be required to provide uniform distribution of desired quantities of iron powder within the sediment at different depths and over sufficient areas using one injection point that would render the creation of a clean cap in the sediment cost effective.

A flume will be constructed in the Stevens laboratory, which will allow water to flow over a tank containing sediment collected from the Passaic River to simulate flow conditions in the river. This flume system will allow us to evaluate ARS's current iron powder injection system operating under two modes; shallow injection of iron powder into sediment and application of the iron powder above the surface of the sediment.

Task-2 In Situ Delivery Method

In order for in situ application of the iron powder technology to become possible, a suitable delivery mechanism of the iron powder to the contaminated sediment must be investigated. We intend to investigate several methods of achieving the delivery. The key parameters associated with the iron powder delivery system are:

- Minimum loss of the powder to areas outside the target area of influence
- Ability to uniformly deliver powder to targeted locations
- Minimum re-suspension of contaminated sediment during placement operations

ARS has developed an iron powder injection system which will be evaluated and modified if necessary to address the above. This currently available commercial system employs iron powder water slurry sprayed into a pressurized nitrogen gas stream that dispenses and distributes desired quantities of iron powder into subsurface soils contaminated with halogenated organics at specified depths. This system has distributed the iron powder over radial distances greater than ten feet into contaminated subsurface soils that exhibits physical characteristics similar to sediment without any observed disturbances occurring at the surface.

In order to evaluate the ARS iron powder injection system for the sediment application, parameters such as nitrogen pressure, flow velocity, and duration of nitrogen flow into the subsurface will determine the concentration of iron powder within the formation and indicate radial distances over which the iron powder is dispersed. Thus, the flume will be used to introduce the iron powder spray with the pressurized nitrogen gas stream at different depths and flow velocities to determine when the sediment becomes re-suspended (suspended soil measurement) in the flume. The results of these measurements combined with ARS's information gained in injecting iron powder for remediation of industrial sites will identify the maximum flow velocities and minimum depths to surface sediment that will not produce re-suspension of the sediment.

In addition, the direct application of the iron powder in both dry and slurry form applied to the surface of the sediment within the plume system will be evaluated in order to provide treatment at shallow depths where ARS's injection system may not be employed because of re-suspension of the sediment. The iron powder can potentially migrate downward into the sediment due to its high specific gravity of 7.8 and through additional mixing of the sediment and iron powder as a result of turbulence induced by the natural water flow or the nitrogen slurry flow velocities employed in ARS's injection technology. The distribution of iron powder within the sediment can readily be measured based upon its magnetic properties.

Parameters that will be used to evaluate the suitability of the application method include:

1. Uniformity of iron powder distribution
2. Stability of powder in the sediment surface under varying water column current conditions (varying bottom shear stresses)
3. Re-suspension of sediment during delivery (measured as suspended sediment loads)
4. Equipment adaptability and cost issues

The results of this study will be used to design the delivery system suitable for the field demonstration of the technology.

Phase III Final Report

The final report will contain the design information needed to field demonstrate the use of zero valent iron powder to reduce the halogenated organics and leachable heavy metals more noble than iron to targeted levels within specified times. The final report will also include the rate constants for the reduction of target PCBs, dioxins, furans, chlorinated herbicides and pesticides, and leachable heavy metal achieved through using different quantities of zero valent iron powder.

The time required in order to achieve the targeted reduction levels of the contaminants are dependant on the rate constants, and the sufficient dispersion of the iron powder within the sediment. The final report will include the concentration of iron powder needed in the

sediment to achieve these desired rates of contaminate reduction. The nitrogen pressure, flow velocity of slurry and nitrogen gas, and duration of injection into sediment required to disperse the iron powder over specified distances will be included within the report. These injection parameters will enhance the iron powder migration downward through the sediment while maintaining acceptable re-suspension of the sediment during the injection. It will include additional technical issues that must be addressed during the field testing phase and remediation costs per cubic yard to treat the sediment.

In summary, the following items will be described in the final report:

1. Introduction and literature review
2. Chemistry of iron based dehalogenation
3. Experimental design
4. Experimental methods
5. Analytical Methods
6. Experimental and Analytical QA/QC
7. Experimental Results
8. Iron powder/Contaminant Reaction Kinetics
9. Injection System Details and Experimental Results
10. Discussion of Project Results
11. Design of a field Pilot Demonstration
12. Technology Economics
13. Conclusions and Recommendations
14. Appendices

1 Raw Data
2 QAPP
3 Health and Safety Plan

Project Integration

This project will be conducted in close collaboration with NJDEP personnel. A project team will be developed with members from Stevens, ARS, and NJDEP. The team will meet once a month to review progress, discuss issues and refine the workplan.

ATTACHMENT E

A CONTRACT BETWEEN
STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
AND

STEVENS INSTITUTE OF TECHNOLOGY
CONTRACT NJDEP-RG-1

SUBCONTRACTOR CERTIFICATION

As a condition of the State's consent to the subcontract entered into between ARS Technologies, Inc.(the "subcontractor") and Stevens Institute of Technology (the "CONTRACTOR")(such subcontract, the "subcontract") for work in furtherance of the contract with the State of New Jersey (the "State") captioned above (the "contract") and in consideration of any payment or benefit the subcontractor may receive for its performance of the subcontract, the subcontractor agrees that the following terms, provisions, and conditions ("terms") shall be additional terms of the subcontract, shall inure to the benefit of the State, and shall not be modified in any way without the written agreement of the State:

1. ACCEPTANCE OF CONTRACT

With respect to all services and goods the subcontractor provides pursuant to the subcontract or in furtherance of the contract, the subcontractor shall comply with, and shall be bound by, all terms of the contract (excepting only those terms, if any, requiring the provision of goods or services not required by the subcontract) as though it were the CONTRACTOR and as though all such terms were explicit terms of the subcontract for the benefit of the State as third party beneficiary. The subcontractor acknowledges that the CONTRACTOR has given it a complete copy of the contract and that it is familiar with all of the contract's terms.

2. DISCLAIMER OF AGENCY RELATIONSHIP

The subcontractor acknowledges and accepts that it is an independent principal working for the CONTRACTOR and has no relationship with the State in connection with the contract

as its agent, servant, employee, grantee, contractor or otherwise.

3. NO CLAIM AGAINST STATE

The subcontractor shall make no claim or demand against the State, its officers, its agents, its servants, or its employees (the "State or its agents") (a) which arises out of or is in connection with, or which is based on, (i) the subcontract or the contract, (ii) any services or goods the subcontractor provides pursuant to the subcontract or in furtherance of the contract, or (iii) the relationship between the subcontractor and the CONTRACTOR in connection with the subcontract or (b) which would not exist if the subcontract did not exist. The subcontractor shall look solely to the CONTRACTOR for satisfaction of any claims, and the CONTRACTOR shall not sponsor any claims against the State on behalf of the subcontractor.

4. INDEMNIFICATION

The subcontractor shall defend, indemnify, protect, and save harmless the State, its officers, its agents, its servants, and its employees from and against any damage, claims, demand, liability, judgment, loss, expense, or cost (collectively, "damage") arising, or claimed to arise, from, in connection with, or as a result of, the subcontractor's performance, attempted performance, or failure to perform in connection with the subcontract (collectively "performance"), regardless of whether such performance was undertaken by the subcontractor, its officers, its directors, its agents, its servants, its employees, its subcontractor, or any other person at its request, subject to its direction, or on its behalf.

As nonrestrictive examples only, this indemnification shall apply, but shall not be limited, to (a) any settlement by the State of any claim or judgement against the State or its agents, provided the subcontractor had the opportunity to participate in the settlement negotiation, and (b) all attorneys' fees, litigation costs, and other expenses of any nature, incurred by the State in connection with any damage. The subcontractor does not hereby agree to indemnify the State against damage to the extent it results from the State's tortious action or inaction for which it would be liable under the New Jersey Tort Claims Act.

The subcontractor (a) shall immediately notify the State of any damage for which it or the State might be liable and (b) shall, at its sole expense, (i) appear, defend, and pay all charges for attorneys, all costs, and all other expenses arising in connection with any damage and (ii) promptly

satisfy and discharge any judgment rendered against the State or its agents, or any settlement entered into by the State, for any damage. As soon as practicable after it receives a claim for damage made against it, the State shall notify the subcontractor in writing and shall have a copy of such claim forwarded to the subcontractor.

The subcontractor shall not assert any defense which would be available to the State but not to the subcontractor, whether arising pursuant to the New Jersey Tort Claims Act or otherwise, without having first obtained the written approval of the New Jersey Division of Law.

This agreement to indemnify shall continue in full force and effect after the termination or expiration of the subcontract and the contract.

5. COVENANT OF NON-COLLUSION

The subcontractor does hereby warrant and represent that this agreement has not been solicited, secured, or prepared directly or indirectly, in a manner contrary to the laws of the State of New Jersey and that said laws have not been violated and shall not be violated as they relate to the procurement or the performance of the contract by any conduct, including the paying or giving of any fee, commission, gift, gratuity or consideration of any kind, directly or indirectly, to any State employee, officer or official.

6. COVENANT AGAINST CONTINGENT FEES

The subcontractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon any agreement or understanding for a commission, percentage, brokerage or contingent fee excepting bonafide employees or bonafide established commercial or selling agencies maintained by the CONTRACTOR for the purpose of securing business.

7. NON-DISCRIMINATION

There shall be no discrimination against any employees who are employed in the work covered by this contract or against any applicant for such employment because of sex, race, religion, color or national origin. This provision shall include, but not be limited to, the following: employment upgrading, demotion or transfer, recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including

apprenticeship. The subcontractor shall insert a similar provision in all subcontracts for services covered by this contract. The subcontractor must also comply with, as appropriate, N.J.S.A. 10:2-1 through 10:2.4, N.J.S.A. 10:5-1 et seq. and 10:5-31 through 10:5-38 and all rules and regulations issued hereunder.

8. PREVAILING WAGE ACT

New Jersey Prevailing Wage Act P.L. 1963, Chapter 150 is made part of every contract entered into by the State where applicable. The subcontractor guarantees that neither he/she nor any subcontractors he/she might employ to perform the work covered by this proposal are listed or are on record in the Office of the Commissioner of the Department of Labor as one who failed to pay prevailing wages in accordance with the provisions of this Act.

9. COMPLIANCE WITH LAWS

In performing his/her responsibilities under this contract, the subcontractor must comply with all local, State and Federal laws, rules and regulations applicable to this contract and to the work to be done hereunder. Failure to comply will constitute a breach of this contract.

10. DISSEMINATION OF INFORMATION

Notwithstanding any other provision of the contract, the subcontractor shall not publish, permit to be published or distribute, use, or disclose to anyone for public consumption, any information, oral or written, concerning the results or conclusions made pursuant to the performance of this contract, without the prior written consent of the State.

11. CONFLICT OF INTEREST

It is agreed and understood that the CONTRACTOR may void this contract, with no liability to the State, if and when the State determines that a conflict of interest or the appearance of a conflict exists between a subcontractor and the State's interest in seeking financial recovery from a party deemed potentially responsible for the cleanup of a hazardous waste site. The State will seek recovery of the costs of the cleanup of specific sites from any and all responsible parties and must anticipate the possibility of litigation with one or more of these parties. In order to avoid a conflict, all subcontractors must disclose any

previous or existing work at the site and any relationship with any potentially responsible party.

In view of the foregoing, all work performed pursuant to this contract will conform to the following procedures: (a) the subcontractor must disclose any contractual or other business relationship occurring during the preceding five years between the subcontractor and any person or entity who is or may be responsible for the cleanup costs at the site and any work whenever done at the site of this contract; (b) parties believed to be responsible will be named by DEP before engagement and thereafter as information becomes available; (c) additionally, if, any time after engagement by the State, the subcontractor becomes aware of any contractual or other business relationship occurring during the preceding five years between the subcontractor and any person or entity who is or may be responsible for the cleanup costs at the site, the subcontractor will immediately convey this information to the State.

The subcontractor will be deemed to have had a business relationship with an alleged or known responsible party, for purposes of this section, if he/she has had such a relationship with a parent, subsidiary, predecessor, or successor of such a party, or if he/she has been engaged by independent legal representatives on behalf of any such parties as so defined.

The State shall make conflict of interest determinations on a case-by-case basis. The subcontractor agrees to accept as final any determination by the State on this issue.

12. STATE ENERGY CONSERVATION PLAN

The subcontractor shall conform his/her operations under this contract to the mandatory standards and policies relating to energy efficiency which are contained in he New Jersey Energy Conservation Plan issued in compliance with the Energy Policy and Conservation Act (P.L. 94 -163). The subcontractor shall include provisions in any subcontract imposing the same requirements on the subcontractor.

13. LEGAL ASSISTANCE

The subcontractor and their personnel shall provide assistance to the State in legal actions by the State against the parties deemed responsible for the site to recover the costs of this contract and/or to prosecute violations of State and Federal environmental laws at the site. This assistance may include the preparation of

reports, assisting State and/or Federal attorney's in the preparation of the government's case testimony in court (expert and/or other types of testimony), testimony at deposition, the preparation and execution of interrogatory responses an affidavits, the preparation of the (official) record and other similar activities.

14. LICENSES, PERMITS AND CERTIFICATIONS

The subcontractor shall obtain and maintain, during the term of this contract, all licenses, certifications, authorizations, or any documents required by the Federal government, State government, County and Municipal governments, and international authorities, wherever necessary, to perform this contract.

15. ADVERSE NOTIFICATION

The subcontractor shall notify the State immediately of any disciplinary action or change of status with regard to any license or permit required for the work hereunder.

DATED: _____

_____
(Type or Print Name of Subcontractor)

BY: _____
(Signature)

_____
(Type or Print Name and Title)

_____
(Number and Street)

_____
(Municipality, State and Zip Code)

_____
(Telephone Number)

ATTEST:

_____

(Signature)

_____

(Type or Print Name and Title)

ATTACHMENT F
STEVENS PERSONNEL HOURLY RATES

STEVENS PERSONNEL	HOURLY RATES
DR. X. MENG	$56.00
DR. G. KORFIATIS	$133.00
ANALYTICAL CHEMIST	$45.00